

tion of pituitrin upon the myometrium,³ inhibition of uterine motility *in vivo*,⁴ and suppression of menstruation,¹ have now been achieved with crystalline progesterone.

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Effect of Thyroid Feeding and Thyroidectomy on Thymus Size in the New-born Rat.

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Certain clinical indications have led to the feeling that a possible interrelationship between thyroid size or condition in the mother and the size of the thymus in the offspring might be demonstrable. This has been investigated experimentally, using the albino rat as the experimental animal.

A study of basal metabolic conditions in normal and thyroid-treated animals has been made. Although somewhat inconclusive, due to variability greater than 10%, the results indicate that one milligram of desiccated thyroid (Parke-Davis) given orally per day will maintain the thyroidectomized rat of about 150 gm. weight in fairly normal metabolic balance.

With this determined, three experiments were set up, each group containing eight proven breeding females, whose normal litters had been used to establish normal thymus size. Group 1 received 2 mg. of desiccated thyroid per day; Group 2, 5 mg.; the females in Group 3 were thyroidectomized. Weight curves were kept on all animals for 2 weeks prior to pregnancy. Vaginal smears were done to determine the stages of estrus and the time of breeding to within 4 hours. All animals were fed on a diet containing $\frac{1}{3}$ dried whole milk and $\frac{2}{3}$ ground whole wheat, plus 1% sodium chloride and 1% calcium lactate. Lettuce and liver were given 3 times a week.

The results were as follows: Prior to pregnancy, the animals in Group 1 made a steady gain in weight; Group 2 gained, but somewhat more slowly; Group 3 showed some gain in weight. Repeated estrous cycles were seemingly normal for the thyroid-fed normal

³ Makepeace, A. W., Corner, G. W., and Allen, W. M., *Am. J. Physiol.*, 1936, **115**, 376.

⁴ Allen, W. M., and Reynolds, S. R. M., *Am. J. Obstet. and Gyn.*, 1935, **30**, 309.

animals. This did not hold true, however, for the thyroidectomized females, where fairly normal cycles were obtained for 4 to 8 days after the operation, but after this, with 2 exceptions where breeding occurred, the animals went into diestrus and have remained in this stage for over 4 weeks.

The results on thymic size in the offspring are given in Table I.

TABLE I.

| | Aver. thymus wt., mg. | Aver. thymus wt. per 5 gm. of new-born rat, mg. | Aver. wt. new-born rat, gm. |
|-----------------------------------|-----------------------------------|--|-----------------------------------|
| Normal. | Aver. 7.4 Max. 7.8 Min. 7.0 | 6.5 | 5.7 |
| 2 mg. thyroid per day | Aver. 5.7 Max. 6.0 Min. 4.9 | 5.3 | 5.4 |
| 5 mg. thyroid per day | Aver. 4.4 Max. 5.0 Min. 3.4 | 4.1 | 5.35 |
| Thyroidectomy (only 2 litters) | Aver. 8.1 Max. 8.3 Min. 7.9 | 7.2 | 5.6 |

These results seem to indicate that excess of thyroid during gestation results in smaller thymus gland growth in the fetus, while low thyroid results in larger thymus glands.

Further experiments indicate that thyroid-fed mothers, although having given normal litters to weaning before thyroid feeding was instituted, are unable to nurse their offspring while receiving the thyroid. In the 2 cases observed, the thyroidectomized mothers seemed to have considerable difficulty at parturition.

An effort is being made to determine whether these results may be of significance in the clinical syndrome known as status thymico-lymphaticus.